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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,571	02/27/2004	Chien-Hsueh Shih	67,200-1228	9129

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EXAMINER

WONG, EDNA

ART UNIT PAPER NUMBER

1753

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/788,571

Applicant(s)

SHIH ET AL.

Examiner

Edna Wong

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4,9-11,13-15,17,18 and 20 is/are rejected.
- 7) ☒ Claim(s) 5-8,12,16 and 19 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

Specification

The disclosure is objected to because of the following informalities:

page 2, line 2, the word "remov7ing" should be amended to the word -- removing

--.

page 6, line 19, the word "deionixed" should be amended to the word -- deionized

--.

page 9, line 22, the word "aromitic" should be amended to the word -- aromatic --.

page 15, line 21, it is unclear what is meant by "5 5 ppm".

page 18, line 9, "S1" should be amended to the -- 51 --.

page 18, line 17, "S2" should be amended to the -- 52 --.

page 18, line 22, "S3" should be amended to the -- 53 --.

page 19, line 8, "S4" should be amended to the -- 54 --.

page 19, line 15, "S5" should be amended to the -- 55 --.

Appropriate correction is required.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

Claims 2, 4, 6, 8, 10, 14 and 18 are objected to because of the following informalities:

Claim 2

line 4, the word "pyrollidone" should be amended to the word -- pyrrolidone --.

Claim 4

line 4, the word "pyrollidone" should be amended to the word -- pyrrolidone --.

Claim 6

line 4, the word "pyrollidone" should be amended to the word -- pyrrolidone --.

Claim 8

line 4, the word "pyrollidone" should be amended to the word -- pyrrolidone --.

Claim 10

line 4, the word "pyrollidone" should be amended to the word -- pyrrolidone --.

Claim 14

line 3, the word "pyrollidone" should be amended to the word -- pyrrolidone --.

Claim 18

line 3, the word "pyrollidone" should be amended to the word -- pyrrolidone --.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Solution

I. Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Naarmann et al. (US Patent No. 4,468,291).

Solution

Naarmann teaches an electrochemical plating electrolyte solution, comprising:

(a) an electrolyte bath solution (= an electrolyte solvent) [col. 3, lines 10-32]; and
(b) a polymer additive provided in said electrolyte bath solution, said polymer additive comprising polymers having an aromatic monomer (= pyrrole) [col. 2, lines 7-21] and an aromatic amine monomer (= comonomer) [col. 2, lines 22-50].

The aromatic amine monomer comprises a functional group selected from the group consisting of imidazole and an imidazole derivative (= imidazole) [col. 2, lines 22-50].

II. Claims **9 and 11** are rejected under 35 U.S.C. 102(b) as being anticipated by **Naarmann et al.** (US Patent No. 4,468,291).

Naarmann teaches an electrochemical plating electrolyte solution, comprising:

(a) an electrolyte bath solution (= an electrolyte solvent) [col. 3, lines 10-32]; and
(b) a polymer additive provided in said electrolyte bath solution, said polymer additive comprising polymers having an aromatic monomer (= pyrrole) [col. 2, lines 7-21] and an aromatic amine monomer (= comonomer) [col. 2, lines 22-50] and a cationic charge density of from about 1 meq/g to about 6 meq/g (*inherent*).

The aromatic amine monomer comprises a functional group selected from the group consisting of imidazole and an imidazole derivative (= imidazole) [col. 2, lines 22-50].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Solution

I. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naarmann et al. (US Patent No. 4,468,291) as applied to claims 1 and 3 above, and further in view of Hamnett et al. (US Patent No. 5,527,434).

Naarmann is as applied above and incorporated herein.

The solution of Naarmann differs from the instant invention because Naarmann does not disclose the following:

- a. Wherein said aromatic monomer comprises a functional group selected from the group consisting of benzene and pyrrolidone, as recited in claim 2.
- b. Wherein said aromatic monomer comprises a functional group selected from the group consisting of benzene and pyrrolidone, as recited in claim 4.

Like Naarmann, Hamnett teaches an solution containing a monomer component and an electrolyte (col. 4, lines5-11). Hamnett teaches that the monomer components is selected from at least one of pyrrole, thiophene, bithiophene, benzene, aniline and benz[c]-thiophene (col. 8, claim 7).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to have modified the aromatic monomer (= pyrrole) described by Naarmann with wherein said aromatic monomer comprises a functional group selected from the group consisting of benzene and pyrrolidone because Naarmann teaches that the pyrroles can be employed alone or mixed with one another (col. 2, lines 13-14).

Since Hamnett teaches that pyrrole and benzene are functionally equivalent as aromatic monomers, using benzene as an aromatic monomer in Naarmann would have been well within one having ordinary skill in the art as suggested and taught by Hamnett (col. 8, claim 7).

II. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Naarmann et al.** (US Patent No. 4,468,291) as applied to claims 9 and 11 above, and further in view of **Hamnett et al.** (US Patent No. 5,527,434).

Naarmann is as applied above and incorporated herein.

The solution of Naarmann differs from the instant invention because Naarmann does not wherein said aromatic monomer comprises a functional group selected from the group consisting of benzene and pyrrolidone.

Like Naarmann, Hamnett teaches a solution containing a monomer component and an electrolyte (col. 4, lines 5-11). Hamnett teaches that the monomer components is selected from at least one of pyrrole, thiophene, bithiophene, benzene, aniline and benz[c]-thiophene (col. 8, claim 7).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to have modified the aromatic monomer (= pyrrole) described by Naarmann with wherein said aromatic monomer comprises a functional group selected from the group consisting of benzene and pyrrolidone because Naarmann teaches that the pyrroles can be employed alone or mixed with one another (col. 2, lines 13-14).

Since Hamnett teaches that pyrrole and benzene are functionally equivalent as aromatic monomers, using benzene as an aromatic monomer in Naarmann would have been well within one having ordinary skill in the art as suggested and taught by Hamnett (col. 8, claim 7).

III. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 60-17092 ('092).

JP '092 teaches an electrochemical plating electrolyte solution, comprising:

(a) an electrolyte bath solution (= an alkaline zinc electroplating solution); and
(b) a polymer additive provided in said electrolyte bath solution, said polymer additive comprising polymers (page 4, Table, Examples 7 and 11)) [abstract].

The aromatic monomer comprises a functional group selected from the group consisting of benzene and pyrrolidone (= benzyl) [page 4, Table, Examples 7 and 11].

The aromatic amine monomer comprises a functional group selected from the group consisting of imidazole and an imidazole derivative (= an imidazole derivative) [page 4, Table, Examples 7 and 11].

The solution of JP '092 differs from the instant invention because JP '092 does not disclose wherein said polymers have an aromatic monomer and an aromatic amine monomer, as recited in claim 1.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the polymers described by JP '092 with wherein said polymers have an aromatic monomer and an aromatic amine monomer because JP '092 discloses polymers which reasonably appears to be either identical with or only slightly different than the polymers presently claimed. One having ordinary skill in the art would have reasonably concluded that polymers having an aromatic monomer and an aromatic amine monomer are not significantly different from polymers having an aromatic constituent and an aromatic amine constituent.

IV. Claims **9-11 and 13-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 60-17092 ('092)**.

JP '092 teaches an electrochemical plating electrolyte solution, comprising:

- (a) an electrolyte bath solution (= an alkaline zinc electroplating solution); and
- (b) a polymer additive provided in said electrolyte bath solution, said polymer additive comprising polymers (page 4, Table, Examples 7 and 11) [abstract] and a cationic charge density of from about 1 meq/g to about 6 meq/g (*inherent*).

The aromatic monomer comprises a functional group selected from the group consisting of benzene and pyrrolidone (= benzyl) [page 4, Table, Examples 7 and 11].

The aromatic amine monomer comprises a functional group selected from the group consisting of imidazole and an imidazole derivative (= an imidazole derivative) [page 4, Table, Examples 7 and 11].

Each of said polymers has a molecular weight of from about 2,000 to about 400,000 (page 4, Table, Examples 7 and 11, esp., from the 100-150 repetitive units).

The solution of JP '092 differs from the instant invention because JP '092 does not disclose wherein said polymers have an aromatic monomer and an aromatic amine monomer, as recited in claim 9.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the polymers described by JP '092 with wherein said polymers have an aromatic monomer and an aromatic amine monomer because JP '092 discloses polymers which reasonably appears to be either identical with or only slightly different than the polymers presently claimed. One having ordinary skill in the art would have reasonably concluded that polymers having an aromatic monomer and an aromatic amine monomer are not significantly different from polymers having an aromatic constituent and an aromatic amine constituent.

Method

V. Claims **17-18 and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 60-17092 ('092)**.

JP '092 teaches a method of electroplating a metal on an electroplating surface, comprising the steps of:

- (a) providing an electrolyte bath solution (= an alkaline zinc electroplating solution);
- (b) mixing a polymer additive with said electrolyte bath solution, said polymer additive comprising polymers having an aromatic constituent (= benzyl) and an aromatic amine constituent (= an imidazole derivative) [page 4, Table, Examples 7 and 11];
- (c) immersing said electroplating surface in said electrolyte bath solution; and
- (d) electroplating said metal (= a satin-finished Zn electroplate) onto said electroplating surface (abstract).

The aromatic monomer comprises a functional group selected from the group consisting of benzene and pyrrolidone (= benzyl) and said aromatic amine monomer comprises a functional group selected from the group consisting of imidazole and an imidazole derivative (= an imidazole derivative) [abstract].

Each of said polymers has a molecular weight of from about 2,000 to about 400,000 (page 4, Table, Examples 7 and 11, esp., from the 100-150 repetitive units) and a cationic charge density of from about 1 meq/g to about 6 meq/g (*inherent*).

The method of JP '092 differs from the instant invention because JP '092 does not disclose wherein said polymers have an aromatic monomer and an aromatic amine monomer, as recited in claim 17.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the polymers described by JP '092 with wherein said polymers have an aromatic monomer and an aromatic amine monomer because JP '092 discloses polymers which reasonably appears to be either identical with or only slightly different than the polymers presently claimed. One having ordinary skill in the art would have reasonably concluded that polymers having an aromatic monomer and an aromatic amine monomer are not significantly different from polymers having an aromatic constituent and an aromatic amine constituent.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter:

Claims 5-8 define over the prior art of record because the prior art does not teach or suggest the electrochemical plating electrolyte solution of claim 1 wherein each of said polymers has a chemical formula of $\text{CH}_3(\text{CH}_2\text{CHX})_m(\text{CH}_2\text{CHYCH}_2)_n\text{CH}_3$, where X is an aromatic functional group; Y is an aromatic amine functional group; and m and n are integers indicating numbers of said aromatic monomer and said aromatic amine monomer, respectively, in said each of said polymers.

Claim 12 defines over the prior art of record because the prior art does not teach or suggest the electrochemical plating electrolyte solution of claim 9 wherein each of said polymers has a chemical formula of $\text{CH}_3(\text{CH}_2\text{CHX})_m(\text{CH}_2\text{CHYCH}_2)_n\text{CH}_3$, where X is

an aromatic functional group; Y is an aromatic amine functional group; and m and n are integers indicating numbers of said aromatic monomer and said amine monomer, respectively, in said each of said polymers.

Claim 16 defines over the prior art of record because the prior art does not teach or suggest the electroplating electrolyte solution of claim 13 wherein each of said polymers has a chemical formula of $\text{CH}_3(\text{CH}_2\text{CHX})_m(\text{CH}_2\text{CHYCH}_2)_n\text{CH}_3$, where X is an aromatic functional group; Y is an aromatic amine functional group; and m and n are integers indicating numbers of said aromatic monomer and said aromatic amine monomer, respectively, in said each of said polymers.

Claim 19 defines over the prior art of record because the prior art does not teach or suggest The method of claim 17 wherein each of said polymers has a chemical formula of $\text{CH}_3(\text{CH}_2\text{CHX})_m(\text{CH}_2\text{CHYCH}_2)_n\text{CH}_3$, where X is an aromatic functional group; Y is an aromatic amine functional group; and m and n are integers indicating numbers of said aromatic monomer and said amine monomer, respectively, in said each of said polymers.

The prior art does not contain any language that teaches or suggests the above. Therefore, a person skilled in the art would not have been motivated to adopt the above conditions, and a prima facie case of obviousness cannot be established.

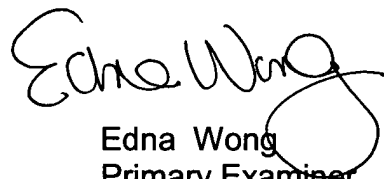
Claims 5-8, 12, 16 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 6 and 8 would be allowable if rewritten to overcome the claim objection(s) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Edna Wong
Primary Examiner
Art Unit 1753

EW
December 7, 2005